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T-Motives

Abstract:

Key results due to O. Caramello show us that there is a regular theory such that the Barr exact completion of its regular syntactic category is equivalent to the category of Nori effective motives.

In this talk, I will explain and consider a (co)homology theory T on any base category C as a fragment of a first-order theory whose models are certain functors to (families of internal abelian) groups satisfying some exactness conditions. Denote $A[T]$ the Barr exact completion of the regular syntactic category: this is an abelian category whose objects may be called constructible effective T -motives.

Furthermore, under mild conditions on the base category C we get a T -motivic functor from C to $D(\text{Ind-}A[T])$ the (unbounded) derived category of the Ind category of $A[T]$: we may call T -motivic complexes the objects of (a suitable localization of) the category $D(\text{Ind-}A[T])$.

In particular, if C is the category of algebraic schemes over a subfield of the complex numbers we get an exact functor from constructible effective T -motives to Nori effective motives which lifts to T -motivic complexes. Finally, if C is the category of algebraic schemes, I explain a way to construct a functor from the category of T -motivic complexes to the category of effective (unbounded) Voevodsky motivic complexes and provide some evidence for the latter being obtained as a (Bousfield) localization of the former.